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NOTES FOR STUDENTS

Vegetation of the high Andes.—WEBERBAUER draws this picture of the andine vegetation:^{8a} In the high Andes of central Peru most plants are not structurally xerophilous, and dessication by the high altitude is much restricted by the abundant precipitation and the prevalence of clouds. Were the danger of drying so great, one would expect that the moistest locations would bear the most species and the most vigorous forms, and that on the moist ground the vegetation would ascend higher than elsewhere. But the vegetation of the high Andes presents no such picture; the high-andine moor contains fewer species than the meadows of cushion and rosette plants, and none of those stouter forms which in their aspect recall the lower regions—the shrubs, tufted grasses, and tall-stemmed herbs; these grow by preference rather on the dry slopes, the stony ground, and the rocks; and upon a stony substratum the limits of vegetation run higher than upon well-watered ground. The explanation of these phenomena is to be sought, in my opinion, in the temperature of the ground. By the low temperature of the soil many plants are kept away from the moors, while the simultaneous high temperature of the rocks is favorable for vegetation. That temperature of the soil at these elevations plays an important rôle is indicated by the horizontal position of roots, referred to in an earlier paper,^{8b} and by the very aspect of the vegetation.—C. R. B.

Transmission of tropistic stimulation.—FITTING^{8c} has undertaken to ascertain in what manner the tissues of perception and reaction are connected that the stimulus indirectly determines the direction of the curvature. The work consists mainly of a study of phototropic response (coleoptile of the grasses, chiefly *Avena*) as affected by more or less complete disconnection of the tissue between the apex and base. Wounding by transverse incision or by splitting does result in a feeble traumatic response, but neither the growth nor the capacity for perception and response is significantly affected. It may be said that the reliability of the author's conclusions hinges largely upon the truth of this statement, but the reviewer finds no reason for doubt and the work of ROTHERT is in accordance with it. The author shows that whatever course transmission is compelled to follow, the curvature is entirely independent of the unilateral occupation of the perceptive organ by the stimulus. Individual segments of halved or quartered coleoptiles will respond if the segment includes a small portion of the apex. Even in leaves from whose central portion a large square of tissue has been removed, transmission occurs. The stimulation seems to spread with equal ease across or along the organ. The author regards it highly probable that phototropic transmission

^{8a} WEBERBAUER, A., Weitere Mitteilungen über Vegetation und Klima der Hochanden Perus. Engler's Bot. Jahrb. 39:449-461. pls. 4, 5. 1907.

^{8b} *Op. cit.* 37:60 ff. 1905.

^{8c} FITTING, HANS, Die Leitung tropistischer Reize in parallelotropen Pflanzenteilen. Jahrb. Wiss. Bot. 44:197-253. fig. 26. 1907.